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BIBLIOGRAPHICAL NOTICE.

The Foraminifera: an Introduction to the Study of the Protozoa.
By FREDERICK CHAPMAN, A.L.S., F.R.M.S., Palæontologist,
National Museum of Melbourne. With numerous Illustrations.
8vo. Pp. xx & 354. Longmans, Green, & Co., 1902. Price 9s.

THE publication of this new manual of the Foraminifera must be very gratifying to both the biologist and the geologist. To the former the natural relationships and the life-history of the

genera and species are well represented, and to the latter the relative abundance of the groups in successive ages of the Earth's history.

This is not a mere compilation of statements from books on special branches of the subject, but is honestly the result of research by a real rhizopodist, working in touch with others and fully acquainted with the manifold literature of the Foraminifera and their allies. Their physical nature and modes of occurrence, their shell-structure, plan of growth, and distribution are carefully elucidated in 49 pages, and have 26 usefully illustrative text-figures. The opinions of early authors and their notions of these Microzoa are concisely given at pages 50-53.

Mr. Chapman then proceeds with a clear definition and classification of the Foraminifera. In this the advantages of a sound critical knowledge of all the variations of the natural type species support him in linking the divergent forms and in consolidating the systematic assemblages of apparently specific groups. We may note that at page 220 the genus *Anomalina* should by right be referred to "D'Orbigny, 1826."

The resultant ten families are carefully described at pages 73-250, and illustrated by 14 plates, each devoted to the types of one family—mostly in outline, but very correct. Such separate groupings, each giving a *coup d'œil* of the members of a family, were used with advantage by Dr. J. G. Egger in his Report on the Dredgings of the 'Gazelle' (see Ann. & Mag. Nat. Hist., April 1894).

Very much new and authentic information, as to structure, range, and relationships, has been worked into this important part of the subject. At page 77 a diagrammatic table is introduced, giving the relative persistency and abundance of the Foraminifera in the geological series. The following families are indicated as ranging from the Palæozoic age or the oldest-known fossiliferous strata, viz.: Textulariidae, Lagenidae, Globigerinidae, and the Rotalidae. From the later Palæozoic times the Miliolidae, Astrorhizidae, Lituolidae, and Nummulinidae continue upwards. The Chilostomellidae seem to be of only Tertiary age.

The geological range is treated in detail at pages 251-277, and is illustrated by nine very good photographic text-figures of pieces of strata, composed of Foraminifera, from the Cambrian formation upwards to Tertiary limestones and recent deposits.

The geographical range (pages 278-290) and the notes on collecting and mounting specimens (pages 291-326) are very interesting, trustworthy, and full of new matter. Classified bibliographic lists (pages 307-345) and a carefully constructed index (pages 348-354) complete this very valuable, well-printed, and inexpensive work.

The frontispiece shows the famous Foraminiferal sands of Dog's Bay, Galway, Ireland.

There is a short, earnest, friendly dedication to Thomas Rupert Jones, besides allusions to sources of information, and special reference to Professors G. P. Howes and J. W. Judd having kindly aided the Author in carrying out his work.